REMARKS

Applicant respectfully requests the Examiner to reconsider the above-captioned application in view of the above amendments and the following remarks.

Canceled Claims

Claims 15-57 were previously withdrawn in response to a Restriction Requirement. These claims have now been canceled without prejudice.

Claim rejections

Claims 1-4, 6-9, 13, 14, 46, 47, 58-65 and 67 are rejected under 35 U.S.C. 103(a) as unpatentable over Johnsgard et al. (USPN 6,342,691) in view of Shih et al. (USPN 6,120,640). Claims 48, 66 and 68 are rejected under 35 U.S.C. 103(a) as unpatentable over Johnsgard et al. and Shih et al in view of Koike (USPN 5,065,698). Claims 1-4, 6-9, 10, 13, 14 and 47 are rejected under 35 U.S.C. 103(a) as unpatentable over Wengert et al (USPN 6,325,858) in view of Shih et al. Claims 46 and 48 are rejected under 35 U.S.C. 103(a) as unpatentable over Wengert et al. and Shih et al. in view of Koike.

As stated by the Examiner, "none of the references teach a devitrification barrier coating having a thickness of about 1 to 10,000 angstroms." Nevertheless, the Examiner argues that "it would be obvious to those of ordinary skill in the art to optimize the thickness of the silicon nitride devitrification barrier." However, as explained below, there is no teaching or suggestion in the cited art to use silicon nitride as a devitrification barrier. Moreover, before an optimum range can be characterized as a result of routine experimentation, a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves the recognized result. *See* MPEP § 2144.05. In this case, the cited art does not recognize the use of silicon nitride as a devitrification barrier coating on a support surface (independent Claim 1) or on a thermocouple (independent Claim 58). As such, there is no recognition in the cited art of the "recognized result" needed for one of ordinary skill in the art to optimize the thickness of the devitrification barrier coating as suggested by the Examiner.

For example, Shih disclosed an erosion resistant barrier of silicon nitride as an alternative to B_4C. However, no thickness is disclosed for this silicon nitride barrier and the disclosed thickness of the B_4C barrier (approximately 1,250,000 angstrom) is significantly larger than the claimed range of 1 to 10,000 angstroms. *See* Col. 9, lines 19-25 and Col. 10, lines 50-65. In

addition, the erosion resistant barrier is for walls made of aluminum, aluminum based materials, stainless steels and other steels. *See* Col. 11, 45-55. The thickness of the barrier is determined by the erosion rates in the reactor. *See* Col. 5, lines 30-34. Accordingly, Shih would merely suggest to one of skill in the art a relatively thick erosion barrier over metallic walls. As taught by Shih, the thickness of this coating would be determined by the erosion rates of the reactor. Importantly, there is no teaching or suggestion to use a silicon nitride coating as a devitrification barrier.

Nevertheless, the Examiner stated that it would have been obvious to modify the silicon nitride barrier of Shih to achieve the claimed thickness because "it is well established that thermal isolation of any material, including CVD equipment, depends on both the thermal conductivity of the protective coating and the thickness of the protective coating per Fourier's law." However, the claimed barrier is not a thermal barrier but a devitrification barrier. As such, while Fourier's law may guide one of ordinary skill in the art in selecting the thickness of a thermal barrier, it does not make obvious the recited thickness of a devitrification barrier coating. That is, Fourier's law does not relate devitrification to the thickness of the coating, and therefore does not teach or suggest the recited thickness.

In a similar manner, Johnsgard also does not disclose using silicon nitride as a devitrification barrier coating. Instead, Johnsgard discloses using silicon nitride as a *reflective layer* on an insulating reactor wall. *See* Col. 17, lines 22-30. Specifically, Johnsgard states that one alternative to glazed opaque quartz is to use insulating walls "formed from a transmissive material such as clear quartz [that have been] coated with a reflective material such as alumina, silicon carbide or silicon nitride." *Id.* Johnsgard therefore does not provide any teaching or suggestion for using a silicon nitride coating as a devitrification barrier, and therefore does not teach or suggest the recited thickness.

With respect to Wengert, this reference discloses coating a non-vitreous material (e.g., graphite) with silicon carbide. *See* Col. 1, lines 30-35. Wengert also discloses a separate component or sheath (considerably thicker than the recited coating) that fits over a corresponding quartz component. *See* Col. 7, lines 5-10. Therefore, Wengert also does not provide any teaching or suggestion for using a silicon nitride coating as a devitrification barrier, and therefore does not teach or suggest the recited thickness.

In summary, there is no motivation in the cited art to optimize the thickness of a silicon carbide coating for use as a devitrification barrier. Instead, Shih discloses an erosion barrier of unspecified thickness, Johnsgard discloses a reflective layer of unspecified thickness, and Wengert discloses a coating of unspecified thickness for a non-vitreous material. Therefore, the cited art does not disclose the "recognized result" needed for one of ordinary skill in the art to optimize the thickness of a devitrification barrier coating. The Examiner relies heavily on Fourier's law. However, Fourier's law merely relates thickness to the thermal isolation of a coating. Fourier's law provides no guidance on how determine the thickness of a coating used as a devitrification barrier, and therefore does not teach or suggest the recited thickness.

CONCLUSION

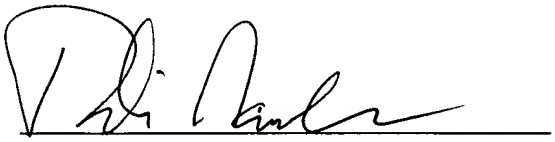
For the foregoing reasons, it is respectfully submitted that the rejections set forth in the outstanding Office Action are inapplicable to the present claims. Accordingly, early issuance of a Notice of Allowance is most earnestly solicited.

The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claims in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicant's attorney in order to resolve such issue promptly.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: November 29, 2004

By: 

Rabinder N. Narula
Registration No. 53,371
Attorney of Record
2040 Main Street
Fourteenth Floor
Irvine, CA 92614
(949) 760-0404

H:\DOCS\RNN\RNN-9358.DOC
112904